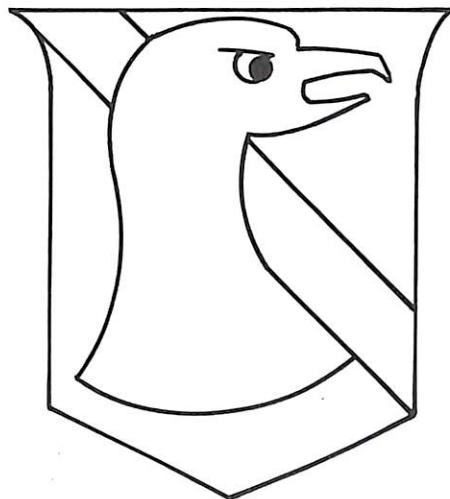


Massachusetts Rifle Association

*organized 1875*



Fundamentals of Pistol Marksmanship

## ATTAINING A MINIMUM ARC OF MOVEMENT

It is necessary during firing to press the trigger under varying conditions of pistol movement in conjunction with correct sight alignment. In order to apply coordinated pressure on the trigger, the shooter must wait for those very definite times when all control factors are optimum and firing conditions become favorable. The rule that must be observed as the first step in attaining control of your shooting is: "You must never attempt to fire until you have completely settled into a minimum arc of movement."

## FUNDAMENTALS OF PISTOL MARKSMANSHIP

The fundamentals of pistol marksmanship embrace all of those physical factors essential to the firing of an accurate shot. Accuracy, in this sense, assumes that the weapon is zeroed, that a high degree of inherent accuracy exists in both the weapon and the ammunition, and that the firing is taking place under ideal conditions.

Essentially, accurate shooting with a pistol requires no elements other than those described in the following sentence: ALIGN THE SIGHTS PROPERLY ON THAT PART OF THE TARGET REQUIRED FOR YOUR GROUP TO CENTER IN THE TARGET AREA AND CAUSE THE HAMMER TO FALL WITH-OUT DISTURBING THAT ALIGNMENT. All elements of pistol shooting such as position, grip, sight alignment, breathe control, trigger control, physical condition, and psychology of shooting, when perfected, simply enables the shooter to perform the action described in the above key sentence.

In order for a shot to be accurate, it is first necessary to make sure that the pistol will be held as motionless as it is possible to do so during the time that the shot is being fired. The stance assumed by the shooter must provide the greatest stability possible for both the shooter's body and the weapon.

To obtain a minimum arc of movement the shooter must give the pistol a definite stability of direction. Proper body position points the pistol directly toward the target with no tendency to drift or move to either side. Likewise, the vertical movement of the pistol is confined to the aiming area. Breathing is accompanied by the rhythmic movement of the chest, and in order to keep the pistol as immobile as possible, the shooter must hold his breath for the length of time required to deliver an accurate shot. To obtain correct sight alignment, it is necessary for the shooter to grip the pistol in a manner which guarantees that he is holding the pistol firmly and that trigger pressure is applied straight to the rear. The delicate balance of sight alignment and minimum arc of movement can be easily disturbed if the trigger is activated in a manner which causes excess movement. However, since the shooter cannot achieve complete immobility when assuming the stance and position, the trigger has to be pressed during some movement of the pistol. In order to deliver an accurate shot within his ability to hold, the shooter must not only press the trigger evenly, but he must do so with correct sight alignment. The size of the shot group will, therefore, not exceed the dimensions of the arc of movement, provided the shot breaks as a surprise and no reflex action of muscles disturbs the delivery of the shot.

To help the shooter acquire the necessary knowledge to master all the factors that control his shooting, we shall analyze in detail each separate element of accurate shooting - stance, position, grip, holding the breath, sight alignment, and control of the trigger. Also included will be certain methods of training that will accelerate the shooter's development into a champion pistol shot. This status is achieved only after the shooter has mastered the technique of executing the fundamentals.

In order to learn how to fire a shot at the proper time, the shooter must make analysis of the time needed to settle and the duration of the minimum arc of movement.

The entire system, consisting of the shooter's body and the pistol, always undergoes a degree of movement. This is sometimes a pulsating, swaying or erratic arc of movement during aiming and firing a shot. The cause of this movement aside from conditions such as weather, is the action of the muscles maintaining the shooter's body in a definite position. Other action such as blood pulsation, causes movement of individual parts of the shooter's body and the pistol. The nature and extent of the arc of movement changes within the time being devoted to delivering a shot. For example, when the shooter is first getting his sight alignment and has not yet had time to settle his body and pistol, the extent of the movement is relatively great. As the body becomes balanced and the aiming is more precise, the arc of movement minimizes. After a certain length of time, the minimum arc of movement begins to increase, because the muscles begin to fatigue, and the shooter does not have enough air in his lungs to continue holding his breath. If we record the arc of movement, we will see a wavelike line with varying amplitude of oscillations (Figure 1-1).

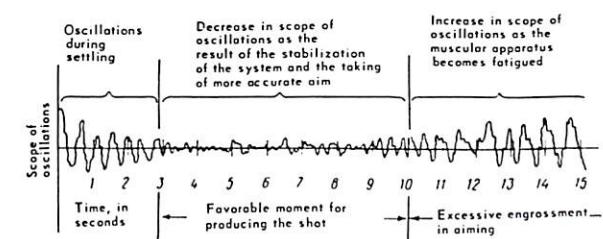


Figure 1-1. Basic Scheme of Minimum Arc of Movement.

It is obvious that under such circumstances the shooter must begin his smooth pressure on the trigger while not devoting too much attention to the arc of movement as long as it remains at the minimum. Continue to apply pressure on the trigger and intensely concentrate on keeping the sights in alignment. The resulting five to seven second period is the most favorable time for firing an accurate shot.

Taking into consideration the direct relationship between accuracy of shooting and the degree of immobility of the pistol when the shot is being delivered, the marksman must give greatest consideration to the selection of a stance, a position, a grip, and a means of breath control which will guarantee the greatest stability to both the pistol and the body. The relatively small degree of movement thus obtained provides a stable foundation, permitting use of the other fundamentals.

### A. THE STANCE.

The excellence of the stance is a major factor in creating conditions for maximum control. A high degree of control is necessary for the delivery of an accurate shot. Every individual possesses a combination of individual characteristics that are peculiar to him alone. Among these are height, weight, proportion of body, development of muscle system, etc. It follows, then, that there cannot be any definite, all-purpose stance which applies equally to all shooters. Therefore, the shooter himself, on the basis of his own particular configurations, must find the variation of stance which provides the greatest degree of stability for his body.

1. The Main Requirements of the Stance: The assumed stance is the position of the human body to support a pistol aimed at a target. Despite the great number of physical differences encountered in any cross-section of shooters, the stance must provide for:

a. The greatest possible degree of equilibrium and stability in the body-weapon system with the least possible strain on the shooter's muscles.

b. A head position which will allow for the most efficient use of the shooter's eyes throughout the sighting and aiming process.

Throughout the process of training it is necessary, therefore, for the shooter to exercise special care in the selection of a stance. The development of a poor stance should be detected and corrected early in the training program. Otherwise, it may require the breaking of deeply ingrained habits later.

Considering the role played by the muscles, bones and ligaments in the creation of stability in the shooter's stance, it is necessary for the shooter to understand the makeup of the human body. See Section Five, Annex I for supplemental information entitled, "Characteristics of the Human Body Relevant to Stance, Position and Grip."

## 2. Assuming the stance:

a. When assuming the firing stance, the head must be held as level as possible, so that the shooter can see the target directly in line with the arm and sights. It is necessary to take all steps to eliminate the tilting of the head to the right or left or an excessive tilting forward. It is not necessary to look sideways or to look at the sights from beneath the eyebrows. The head should not be pushed forward closer to the rear sight; neither should the head be tilted back excessively. This causes undue tension upon the neck muscles and, as a consequence, a slight movement of the head develops from fatigue. This may hinder the maintenance of perfect sight alignment.

b. When assuming a firing stance, the shooter must support the extended arm holding a weapon. As a result, the muscular system undergoes considerable strain. It must not only maintain the shooter's body in a definite position but must also exert a counteraction to the rather large weight of the suspended gun.

c. A shooter supporting a weapon constitutes a single system with a common center of gravity (Figure 1-2). Since the entire system is in equilibrium only when its line of gravity runs through the support area, (Figure 1-3), the holding of the weapon causes a change in the relative position of the individual parts of the body. A compensating displacement is brought about by the necessity to create a counteraction to the weight of the pistol and supporting arm. This compensating displacement of the parts of the body changes the shooter's posture. As a result, when he assumes a firing stance, his body takes on an asymmetric position which is unnatural. The preservation of the body's equilibrium in this unnatural posture requires that a greater load be placed upon the muscles and ligaments reinforcing the movable portions of the body.

d. The shooter has the task of finding for himself a suitable stance which will achieve immobility of the body without an excessive strain on muscles.

Let us assume that the shooter takes a stance for firing that will preserve the natural, erect posture of the body. He will strive to keep it erect with small compensating deviations of the muscle system. Thus, the extended arm holding a pistol places great tension on the muscles in the back and shoulders. In addition, if the shooter's figure is examined from the side, it will become obvious that when the shooter's body is kept stiffly erect, the body will be slightly unstable. The keeping of the body rigid will result in early fatigue and cause undesirable movement.

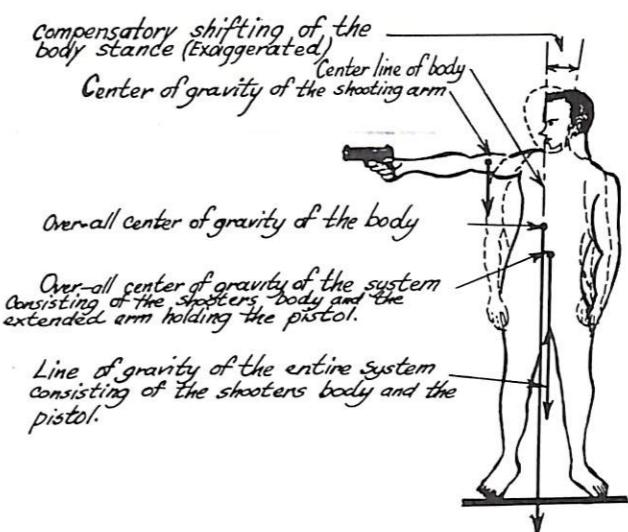


Figure 1-2. Situation of the Over-all Center of Gravity of the Entire System Consisting of the Shooter's Body and Weapon.

The shooter must hold his body in something less than an erect posture, with a slight rearward bend in the back and the pelvis brought slightly forward. In this posture, the body has the vertical line of the center of gravity shifted back of the axis of the hip joints. In such a pose, the body is kept stable in the hip joints not so much by the work of the muscles, but by strong ligaments. The relaxed immobility of the body is attained by counterbalancing the weight of the upper body against the extended firing arm and pistol, and transfer much of the weight to the spinal column.

f. The selection of the most stable stance will include giving the body a certain degree of bend. As shown by practice, the shooter has nothing to fear in giving his body an asymmetric pose.

g. The stability of the firing arm and weapon depends to an extent upon the correct placement of the feet. This determines the support area for the shooter's body. The most stable and most comfortable stance will be when the feet create a support area in the shape of a trapezoid with the feet placed apart, approximately shoulder width. The toes should be spread apart slightly (Figure 1-3). This placement of the feet creates not only a comparatively large support area, but is also the most favorable positioning of the feet for avoiding muscular strain in the legs.

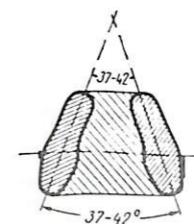


Figure 1-3. Placement of the Body's Support Surfaces - Both Feet - in Relation to One Another, Creating the Support Area for Firing.

h. When assuming the firing stance, the shooter should not attempt to bring the legs too close to one another. Narrow placement of the legs decreases the support area and will result in a loss of stability, causing movement of the firing arm along the horizontal. Do not place the legs too far apart, as this creates undesirable strain on the inner arches of the feet, straining the leg muscles and holding the hip joints rigid, which leads to fatigue and an increase in the arc of movement.

i. In order for the stance to be a stable one, the shooter must, first, distribute the weight of his body, the arm and pistol evenly on both legs; second, the load placed on each leg must pass through the middle of the foot or close to the balls of the feet. When the weight of the body is distributed in this way the body's line of gravity will run through the middle of the support area. The stance will be the most stable when the muscles of both legs carry the same load. The coordinated work of these leg muscles results in the body's weight being alternately shifted in slight corrective moves in order to maintain balance.

j. The degree of strain upon the muscles and ligaments of the knee joints is of importance in the stability of the stance. The insufficiently rigid position of the knee joints will lead to an increase in the body's movement as a whole. By holding one leg straight and keeping the other one partially bent, varying tensions will exert excessive tension on the leg muscles. Inflexible straightening of the legs also causes tension of the leg muscles which leads to a loss of stability.

k. The group of muscles which do not directly participate in maintaining the shooter's body in the vertical position or holding the pistol aimed at the target is the muscles of the left arm and hand, the left-hand portion of the chest, the neck muscles, the abdomen, and the buttocks, must be relaxed as much as possible.

It is necessary to properly position the left or free arm and hand (for right-handed shooter). The free hand should be inserted into the left side pocket in a relaxed manner, or you may hook the left thumb over the waist belt. In relaxation of the left arm and shoulder, the free arm must not be allowed to hang loose, as any wind or recoiling of the body during firing will cause the free arm to swing, transferring to the body any movement.

l. The pistol arm should be extended with the wrist stiff and the elbow locked without strain. The arm must be straight, firmly extended and with no unnecessary tension of the muscles. This establishes solid arm control.

m. The body weight center of gravity should be brought forward slightly from the center of the support area, with a very slight shift toward the tips of the feet to reduce the action of the balance correcting mechanism. This is apparent in the alternate tensing and relaxing of the muscles of the legs, abdomen and lower back. This action to regain equilibrium is continuous. The body cannot remain motionless because the equilibrium does not remain constant. The constant corrective process causes an almost imperceptible weaving or sway.

3. The stance factor is so essential that a step-by-step summary of all of the points important to a proper stance is in order.

a. Stance must provide for:

(1) The greatest possible degree of equilibrium and stability of the shooter's body and weapon with the least possible strain on the shooter's muscular system, and the smallest movement possible of any part of the body, the shooting arm and the pistol.

(2) A head position which will allow for the most favorable conditions for the operation of the eyes during aiming.

b. During training, the shooter must take special care that he is not developing an incorrect stance or body posture which will require a breaking of habits later.

c. The shooter should become familiar with assuming the proper stance and practice getting the same stance each time it is assumed. The requirements are:

(1) The feet are separated about the width of the shoulders or slightly less, toes pointed out slightly.

In order to produce an accurate shot, the shooter must carry out many diverse, but related, actions. Fulfilling this action is compounded by the fact that the pistol is in some degree of motion throughout the period of sighting and aiming. The movement varies according to the stability of the shooter's stance. Consequently, the sight alignment deviates from the aiming area. Often it will move through the aiming area, pausing only for a short period of time in perfect alignment with the target. It is impossible to determine when, and for how long the properly aligned sights will stay in the center of the aiming area. This difficulty is aggravated further by the fact that the shooter is trying to execute coordinated actions when reflex action seeks to contradict them. Such a situation requires the development of conditioned reflexes, and improvement of coordination.

The coordinated action of correct aiming, timely pressure on the trigger, and the correct delivery of the shot is difficult and can be accomplished only by overcoming former uncoordinated reflexes or by acquiring new ones. Only through constant training and attention to accepted techniques can these new reflexes be acquired. The peculiar nature and characteristics of the human nervous system are covered in detail in Annex III entitled, "Processes of the Human Nervous System Relevant to Equilibrium, Trigger Control and Hearing."

FACTORS PROVIDING FOR THE CORRECT CONTROL OF THE TRIGGER.

The pressure put on the trigger must come from independent movement of the trigger finger only. The gripping fingers and the thumb do not move or tighten. Keep the grip pressure constant. Align the sight, settle into your normal aiming area and exert positive, uninterrupted, increasing pressure, straight to the rear, until the hammer falls. You must not look for a perfect sight picture combination of rear sight-front sight-bull's eye. Instead, focus your eye on the front sight, keeping it perfectly aligned in the rear sight notch. The blur of the out-of-focus target may move about slightly, but this movement is relatively unimportant. Any time the weapon is fired with good sight alignment within the normal arc of movement and it is a surprise shot, the shot will be a good one, and will hit the target within your ability to hold.

Trigger control has a series of actions that take place if a smooth release of the firing mechanism is accomplished.

1. Slack and Initial Pressure: Any free movement of the trigger, known as slack, has to be taken up prior to a light initial pressure. This action assures that the tolerances in the firing mechanism linkage are taken up and are in firm contact before positive trigger pressure is applied.

Initial pressure is an automatic, lightly applied pressure, approximately one-fourth or less of the total required to fire the weapon. This careful action is an aid in the positive pressure that will release the hammer quickly and smoothly.

In order to fire a controlled shot the shooter must learn to increase the pressure on the trigger positively, smoothly, gradually, and evenly. This does not mean, however, that the trigger must be pressed slowly. It must be pressed smoothly, without interruption, but the release of the trigger must take no more than 2 to 5 seconds. Numerous accurate rapid fire strings of five shots in ten seconds are fired in a cycle that allows only one second or less to employ the principals of correct trigger control.

Smooth trigger action makes special demands on the trigger finger when pressing upon the trigger; its correct functioning determines to a great extent the quality of the shot. The most carefully attained sight alignment will be spoiled by the slightest error in the movement of the trigger finger.

2. Function of Proper Grip: In order for the index finger to be able to perform its function without spoiling the aim, it is first necessary to have the hand grasp the pistol correctly and create the proper support; permitting the trigger finger to overcome the trigger tension. The pistol grips must be grasped tightly but without any tremor. It is also necessary that the index finger clears the side of the stock. The movement of the index finger must be independent as it presses on the trigger, and also not cause any lateral change to the sight alignment.

3. Proper Placement of the Trigger Finger: It is necessary to apply pressure on the trigger with either the first bone section of the index finger, or with the first joint. The trigger must be pressed straight to the rear. If the finger presses the trigger to the side, undesirable things will happen. The weight of trigger pull will increase; because of additional friction on certain parts of the trigger mechanism an otherwise flawless trigger action will take on the characteristics of a poor trigger when side pressure is exerted on the trigger. Another consideration is the effect that side pressure has on sight alignment. Only slight pressure to the side is required to bring about an error in sight alignment. The prime cause of exerting pressure to the side is improper placement of the trigger finger.

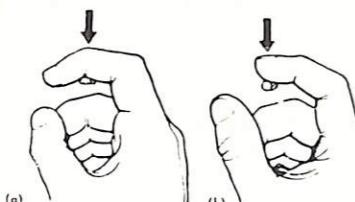


Figure 3-1. Correct Placement of the Index Finger on the Trigger.

(a) With Joint of Index Finger. (b) With First Bone Section of Index Finger.

Ideal trigger finger placement may be modified to a degree by the requirement that the grip provide a natural alignment of the front and rear sights. The shooter frequently must make a compromise to overcome the undesirable effects of not being able to utilize each factor to full advantage.

Ability to control the trigger smoothly is not sufficient in itself to produce an accurate shot. The trigger must be activated in conjunction with correct sight alignment, minimum arc of movement, and maximum undisturbed concentration. This might be called cadence, rhythm or timing. Under any name, it comes only to those who practice frequently.

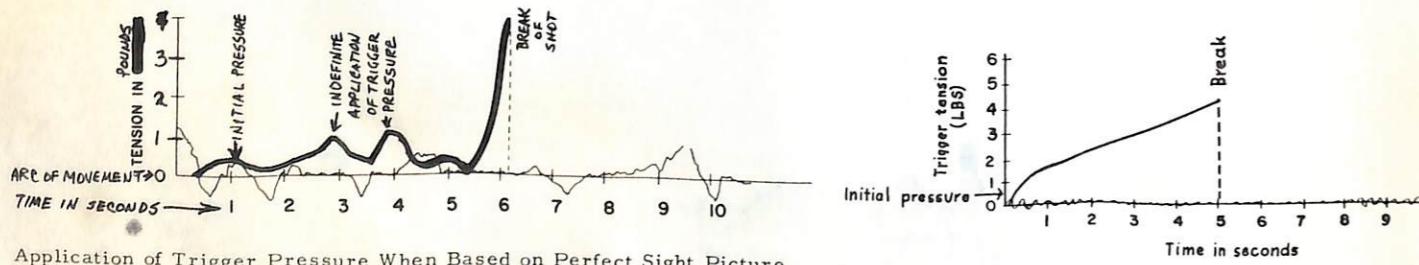
#### APPLICATION OF TRIGGER PRESSURE.

1. Positive Uninterrupted Trigger Pressure-Surprise shot method-is primarily the act of completing the firing of the shot once starting the application of trigger pressure. The shooter is committed to an unchanging rate of pressure, no speed up, no slowdown or stopping. The trigger pressure is of an uninterrupted nature because it is not applied initially unless conditions are settled and near perfect. If the perfect conditions deteriorate, the shooter should not fire, but bench the weapon, relax, replan, and start again.

In instances when the pistol is stable and steady, and the periods of minimum arc of movement are of longer duration, it is immaterial whether the release of the trigger is completed a second sooner or a second later. Anytime that the shot is fired with minimum arc of movement and the sights are in alignment, it will be a good shot. Therefore, when the shooter has established stable minimum arc of movement and sight alignment, he must immediately begin to press on the trigger, smoothly but positively, and straight to the rear without stopping, until a shot is produced. This method of controlling the trigger action will give the shooter a surprise break of the shot before any muscular reflex can disturb sight alignment.

2. Interrupted Application of Trigger Pressure or the "Point" shooting Method: This is a method of trigger control not recommended, although used by some shooters. Some shooters think they can pick the trigger release time even after years of experience.

a. The shooter will align the sights and exert initial pressure on the trigger. He will then make every effort to hold the weapon motionless. During extremely brief moments of motionlessness, pressure is applied on the trigger. If the sight alignment changes and is not perfect, or the arc of movement of the weapon increases, the pressure on the trigger is halted and trigger tension maintained. When sight alignment is again perfect and movement diminishes, pressure on the trigger is resumed until the shot breaks, or after the slack in the trigger is taken up, initial pressure is applied and the shot released by a single swift movement of the trigger finger when there is a decrease in the minimum arc of movement. In this case the presence of perfect sight alignment is not considered essential in initiating trigger action. Abrupt action in applying trigger pressure will disturb the existing sight alignment and other fundamental control factors are subordinated to a minimum arc of movement. The application of all other fundamentals is required regardless of whether or not they are optimum.



Application of Trigger Pressure When Based on Perfect Sight Picture.

Surprise Shot with Positive Uninterrupted Trigger Pressure.

c. A modification of the shooter's proper grip is necessary on different types of pistols. The firmness of the grip remains the same for all calibers and types of pistols and revolvers, but nature of the grasp must correspond to the shape and size of the grips in meeting all the requirements of the proper grip.

In the final analysis, there is only one correct grip for you. It is one that is firm; affords the individual shooter the maximum degree of control over maintaining sight alignment and allows positive, straight to the rear pressure on the trigger without disturbing sight alignment.

#### BREATH CONTROL.

The object of proper breath control is to enable the pistol shooter to hold his breath with a comfortable feeling long enough to fire one shot slow fire; five shots in twenty seconds timed fire; or five shots in ten seconds rapid fire without loss of the ability to hold still or concentrate on sight alignment.

1. To be Effective, Breath Control Must Be Employed Systematically and Uniformly: The ability to concentrate and maintain rhythm is aided.

a. Promote a steady hold. It is generally known that one must not breathe during aiming. Breathing is accompanied by the rhythmical movement of the chest, abdomen, and the shoulders. This causes the pistol to move about excessively, making it almost impossible to produce an accurate shot. Therefore, one must not simultaneously breathe and try to fire a shot, but must endeavor to hold the breath for a short period of time.

b. The physiological processes involved in breathing: The shooter however, must not view the breathing process solely from the movement of the chest and the gun. He must not forget that the process of breathing, which consists of a combination of processes which occur constantly in the human body, determine in general the condition of the human being. Therefore, proper breathing is of great importance during shooting exercises which last several hours. Incorrect breathing technique has an adverse effect upon shooting, especially if the concentration is disturbed by sensing of the need to breathe.

(2) When breathing calmly a person produces an average of 12 - 13 respiratory cycles a minute. Consequently, one respiratory cycle lasts 4 - 5 seconds. If one traces the respiratory cycle, it is not difficult to note that the strained position of inhalation is replaced very quickly by exhalation. The very next inhalation begins after a respiratory pause of 2 to 3 seconds, (figure 1-7) during which time the carbon dioxide accumulates in the lungs. The duration of the respiratory pause is determined by the ratio of oxygen and carbon dioxide in the air remaining in the lungs.

(3) The respiratory pause and the problems of the ventilation of the lungs are of great importance to the shooter. It is obvious that during aiming and applying pressure on the trigger, the breath must be held only after the shooter has exhaled, timing it so that the breath is held at the moment of the natural respiratory pause. During that time the muscles are not strained and are in a relaxed state.

c. A person can prolong by several seconds this respiratory pause, that is, hold his breath comfortably for 15 - 20 seconds, without any special labor and without experiencing unpleasant sensations. This time is more than adequate to produce a shot or shots. Experienced shooters usually take a deep breath before firing and then, exhaling slowly, hold their breath gradually, relax and concentrate their entire attention upon sight alignment and the smooth application of pressure on the trigger (Figure 1-8).

#### 2. Recommended method:

##### a. Prior to fire commands:

(1) When expelling the air from the lungs before aiming, no effort whatever must be exerted. The exhaling must be natural and free, as in ordinary breathing. The air must not be held in the lungs; incomplete exhaling before aiming leads to straining and to stimulation of the nerve centers regulating the breathing, and the shooter's concentration on aiming is distracted.

(2) In order to make sure that during prolonged firing the interruption of the rhythm of breathing does not have an influence upon the shooter, the breath must not be held for an excessive period when trying to fire a slow fire shot. If the shooter does not produce a shot in 8 - 10 seconds, he must stop aiming and take another breath.

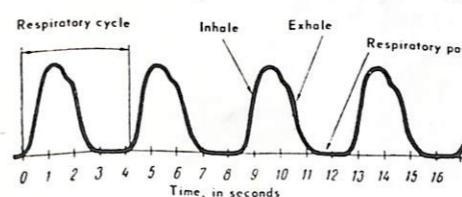
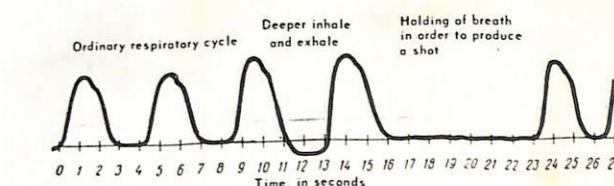


Figure 1-7. Scheme of a Person's Breathing.

Figure 1-8. Scheme of the Manner in Which A Person Holds His Breath in Order to Produce a Shot.



## SIGHT ALIGNMENT

Sight alignment is the most important contribution to firing an accurate shot.

In order for the bullet to hit the center of the target, the shooter must aim the pistol and give the barrel a definite direction relative to the target.

In theory, accurate aiming is achieved when the shooter places in exact alignment, the rear sight with the top and ideas of the front sight, and holds them in alignment in the aiming area.

A requisite for correct aiming is the ability to maintain the relationship between the front and rear sights.

When aiming, the front sight is positioned in the middle of the rear sight notch with an equal light space on each side. The horizontal top surface of the front sight is on the same level as the top horizontal surface of the rear sight notch (figure 2-1.)

**A. RELATIONSHIP OF SIGHTS.** It is necessary to be acutely aware of the relationship of the rear sight to the clearly defined front sight. Normal vision is such that the rear sight of the pistol will be as nearly in focus as the front sight. Some shooters may be able to see only the notch of the rear sight in sharp focus; the outer extremities may become slightly blurred.

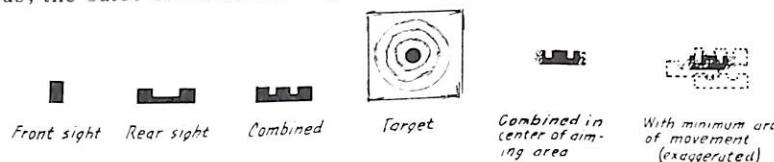


Figure 2-1. The Relationship of the Sights.

**1. Angular Shift Error:** If the shooter does not observe correct aiming (maintaining the top surface of the centered front sight on a level with the top of the rear sight and equal light space on each side of the front sight), there will be few accurate shots. Most often, he locates the front sight in a different position in the rear notch. This accounts for a greater dispersion of shots on the target, since the bullets will deviate in the direction in which the front sight is positioned in the notch. (Figure 2-2). This aiming error is known as angular shift error.

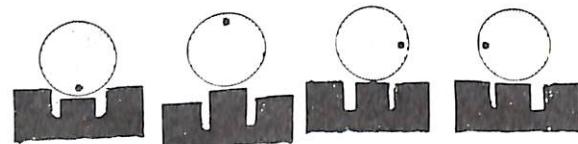


Figure 2-2. Displacement of the Bullet When There is Angular Shift Error in the Alignment of the Front Sight.

**2. Parallel Shift Error:** If the hold (arc of movement) is deviating in near parallel error from the center of the aiming area, the shooter should know that these deflections will not lower the score to the extent of angular shift error. Therefore, sight alignment is the most critical of the two. Thus, the accuracy of a shot depends mainly upon the shooter's ability to consistently maintain correct sight alignment. The main effort should be toward keeping your sights aligned. Holding the pistol perfectly still is desirable but it is not mandatory.

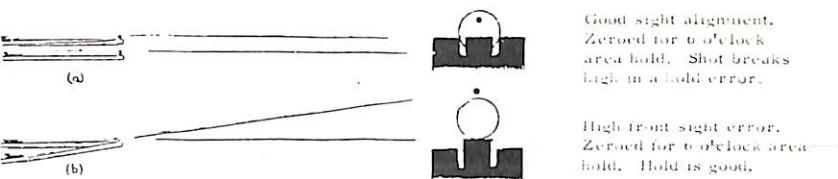


Figure 2-3. Displacement of the Bullet When The Pistol is Shifted: (a) Parallel, (b) Angular;

## B. POINT OF FOCUS.

Correct sight alignment must be thoroughly understood and practiced. It appears on the surface as a simple thing - this lining up of two objects, front and rear sights. The problem lies in the difficulty in maintaining these two sights in precise alignment while the shooter is maintaining a minimum arc of movement and pressing the trigger to cause the hammer to fall without disturbing sight alignment.

The solution is partly in focusing the eye on the front sight during the delivery of the shot.

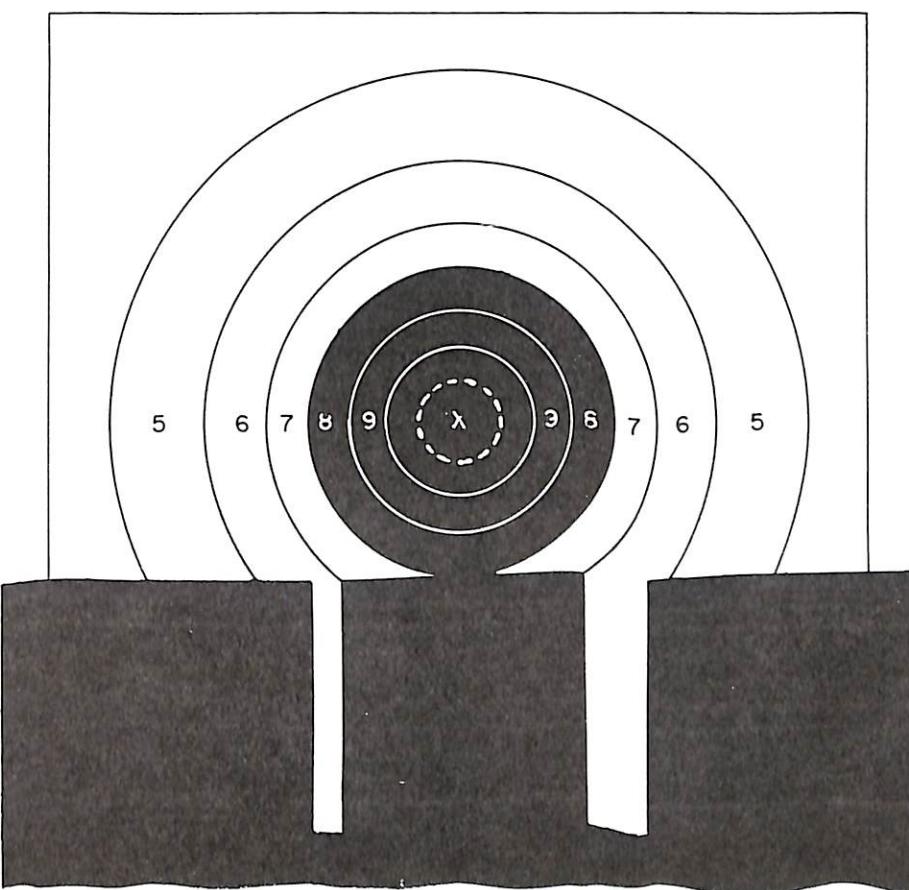


Figure 2-4a. Impossible! The Human Eye Cannot Focus On A Close-UP Object and A Distant Object Simultaneously.



Figure 2-4b. Improper. Control of sight alignment is not precise. Distinct focus on target renders sight indistinct. Error incorporated here is the same as Figs 34a and is not as readily apparent.

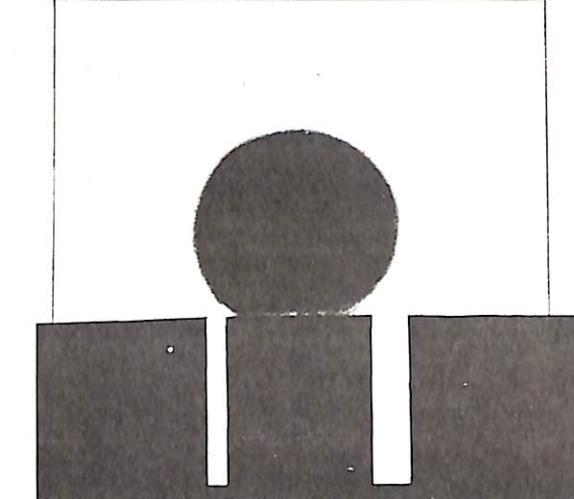


Figure 2-4c. Proper. Control alignment is precise. Focus limited to front sight only, renders the sights distinct and target indistinct and sight relationship can be controlled constantly.

1. It is imperative to maintain "front sight point of focus" throughout the sighting and aiming of the pistol. The shooter must concentrate on maintaining the correct relationship between front and rear sight, and the point of focus must be on the front sight during the short period required to deliver the shot. If the focus is displaced forward, and the target is momentarily in clear focus, the ability of the shooter to achieve correct sight alignment is jeopardized for that moment. Frequently, this is the moment that the pistol fires. A controlled, accurate shot is impossible under these conditions.

2. When the eye is focused on the target the relatively small movement of the arm appears magnified. However, when the eye is correctly focused on the front sight this movement appears to have been reduced.

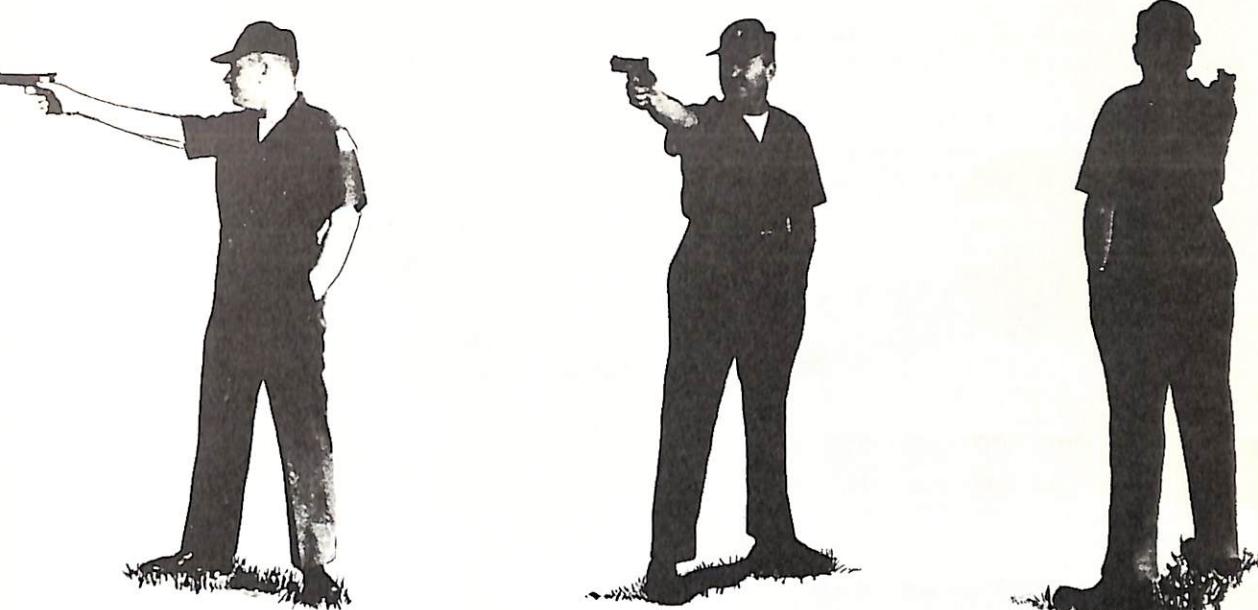
#### C. CONCENTRATION.

1. If the sights are incorrectly aligned, the net result is an inaccurate shot. Carelessness in obtaining correct sight alignment can usually be traced to the shooter's failure to realize its importance. Many shooters will, in the initial phase of holding, line up the sights in a perfect manner. However, as the firing progresses, and the shooter is concentrating on delivering the shot, he often loses correct sight alignment which he attained in the initial phase of his hold. Usually, when the shooter is unable to maintain a pin-point hold, his concentration on sight alignment wavers. An accurate shot is lost because the shooter is thinking of his arc of movement and not the perfection of sight alignment.

2. Another factor which contributes to the deterioration of sight alignment, is the feeling of anxiety which arises over the apparently stationary pressure on the trigger when attempting to fire. An impulse is generated to get more pressure on the trigger, so that the shot will be delivered. When the shooter thinks about increasing the trigger pressure, a degree of the intense concentration required to maintain correct sight alignment is lost. Even if trigger control and the hold are good, the net result will be a poor shot. Sight alignment must remain uppermost in the shooter's mind.

#### TRIGGER CONTROL

Trigger control is of very great importance in producing an accurate shot. When the shooter exerts pressure on the trigger, he must do so in a manner that does not alter the sight alignment, or position of the pistol. Consequently, the shooter must be able to exert smooth, even pressure to the trigger. Furthermore, the trigger must be pressed in conjunction with maximum concentration, peak visual perception of sight alignment and minimum arc of movement.



(2) Stand up erect and relaxed.

(3) The legs should be straight, but not stiff, knees firmly straight but not rigidly locked.

(4) The hips should be level and in a natural position.

(5) The abdomen should be relaxed.

(6) The shoulders and head should be level. No humping over or slouching with an unnatural tilt to the head.

(7) The non-shooting arm should be relaxed, the free hand in the side pocket or thumb hooked over the belt, not hanging loose.

(8) The pistol arm should be extended with the wrist stiff and the elbow locked without strain.

(9) The body weight center of gravity should be brought forward slightly from the center of the support area, with a very slight shift toward the tips of the feet to reduce the action of the balance correcting mechanism.

#### POSITION.

When preparing for accurate shooting, it is insufficient merely to assume a comfortable and stable stance. You must be able to aim or point at your target in a natural, consistent manner. Improper position will affect your ability to establish or maintain the hold in the center of the aiming area. Before each shot or string of shots, it is necessary to check the correctness of the assumed position with respect to the target. Avoid unnecessary muscular tension in the effort to hold in the aiming area. An adverse effect upon the movement of the shooting arm and weapon is caused by extra muscular effort.

1. The shooter must position himself so as to naturally align or point himself and his weapon with the target so the hold will remain in the desired area without a tendency of the shooting arm to drift away from the aiming area.

2. To orient or align yourself properly with the target, use the following method:

a. First face approximately 40 to 50 degrees from the target using the methods of assuming the stance previously mentioned.

b. Look at the target by turning only the head. Keep the head level and turn it far enough toward the target to allow the eyes to look straight out of the head.

c. Raise the arm to align with the target. Close your eyes, raise your pistol arm a foot or two above the horizontal and then allow it to settle back relaxed and naturally to the horizontal. Completely relax the arm and shoulder not being used. Repeat this procedure once or twice and settle into a natural point. A true, natural point is not obtained with the eyes open.

d. After settling into a natural point, open your eyes to check if your arm and pistol are aligned with the target. If the pistol has settled in the center of the target, you have your natural position.

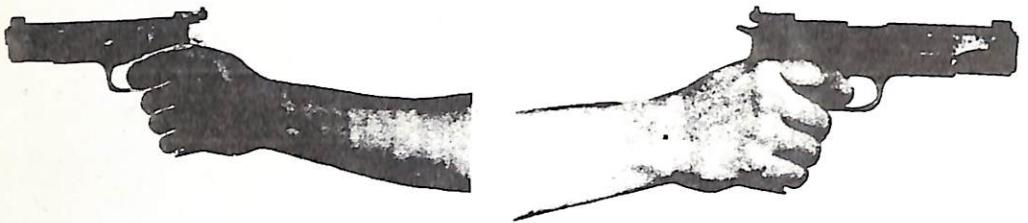
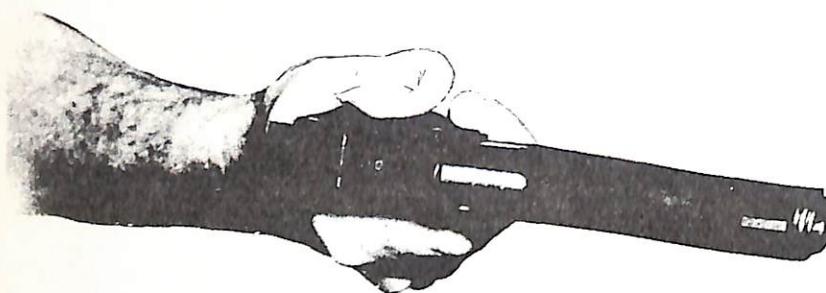


Figure 1-6. The Grip.



If the alignment is natural, you may check for maintenance of sight alignment. With the arm extended, close the eyes, raise and lower the arm and settle. Open the eyes and observe. If the alignment has deviated, reposition the pistol in the shooting hand and repeat the closed eye test until natural alignment of the front and rear sights is achieved and maintained. During shooting, a constant check should be conducted of the tendency of the sights to continue to align themselves. The grip obtained at the beginning of shooting will not necessarily remain correct because the jolting recoil and build-up of fatigue will require correction to the grip to maintain sight alignment.

b. To check for a grip firm enough to prevent shifting after making sure the pistol is unloaded, have the coach bump the pistol rather forcefully, up or to the side with the heel of his hand. Also, have the coach grasp the pistol by the barrel and make an effort to tear it from your grasp.

c. To check for variations in tightness or correctness of grip, it is best to dry fire a few shots before live shooting starts and watch for slight variations in sight alignment.

e. The rapid onset of fatigue and soreness of the shooting hand is usually the result of an incorrect grip.

5. Aids to Developing a Good Grip: The great pistol shooters have: strong hands and a hard grip; a method of gripping without change unless analysis dictates a change that will improve it; a r

a. The "top guns" have a grip like a vise. Exercise devices such as rubber balls, spring grip builders, etc. will develop a strong grip. Exercise devices require constant use. Another approach, to reduce reliance on artificial exercisers, is to engage in work or a sport that places demands on your manual strength and dexterity,

b. Never thoughtlessly change your grip. A correct grip is a precious commodity. It evolves from much hard work, thinking, and planning, plus painstaking analysis. Each satisfactory grip found among the better shooters comes from trial and error. The good grip that is the end product of much effort should not be changed except when sharply critical analysis dictates a change that will improve it. The shooter who is desperately changing his grip hoping that he will chance upon the right solution will generally lower his scores. In the event that a better score is fired under these conditions, it comes on an occasional basis with no tangible reason for the improvement. Analysis and trial, in a never ending quest to improve your marksmanship, is the answer.

## EFFECTS OF ALCOHOL, COFFEE, TOBACCO AND DRUGS

### GENERAL

The habitual use of alcohol, coffee, tobacco and various drugs is harmful to the average person and in no way promotes better body function. We can be easily fooled by misleading advertisements into believing that such things are helpful. For example, an advertisement may tell us that cigarettes are an aid to digestion. Cigarette smoking after meals does cause the saliva to flow more freely and the heart to beat faster, aiding digestion. But, this may also result in overwork for the salivary glands and the heart. In like manner, many people may believe that a highball or cocktail at the beginning of a meal promotes digestion because of the greater flow of the digestive juices that alcohol causes. And what about that change of pace drink, tea? It is no different in caffeine content than coffee but possesses increased amounts of tannic acid.

1. Inform yourself. Any drug which causes the body organs to perform their work at a greater rate than normal, fatigues them sooner and causes them to age more rapidly. Stimulants and depressants overwork many vital organs, often when their best performance is needed for normal body activity. The effects of the use of such substances depend upon how much is used and whether or not the body is strong enough to repair the damage done.

2. In order to understand the discussion that follows there are certain terms whose specific meaning you should know. A stimulant is a chemical which, when taken into the body, excites the organs to greater effort. Depressants are chemicals which slow down body action but may also speed up body functions by reducing the influence of the nerve centers which slow down body action. For example, nicotine increases heart action by depressing the nerves that slow the heart beat, thus causing a faster pulse. Depressants deaden pain and lessen discomfort and thus make us feel better without removing the cause.

b. To learn the fundamentals of pistol shooting is no great achievement in itself. Anyone interested in becoming a pistol shooter can with persistency and training learn to shoot with some degree of proficiency. What then, is necessary to become a skilled shooter? The top shooters in the nation today unanimously agree that control is the most important factor in becoming a top competitor. Control can best be explained as the coordination of mental and physical effort, born in thought and culminating in a concentrated, precise action. This effort must be natural, unstrained, and smooth flowing. Any habit or action that results in departure from perfect coordination will lessen the degree of control and reduce the effectiveness of the action. In shooting, lessening of control shows itself in lower scores and poor performance.

Sometimes when control is declining, analysis may pinpoint some cause other than faulty technique in employment of the fundamentals. What did you have at breakfast? Coffee - two cups and two cigarettes. Enough to ruin anyone's control. Perhaps a few too many last night and a loss of several hours of sleep. Whatever the reasons, they should be noted in your scorebook just as you would enter unusual conditions at a match. In a short period of time, if you are honest with yourself you will be able to piece together enough information upon which to take remedial action. The most difficult person to convince is yourself. No one who habitually smokes or drinks coffee wants to admit that such habits have the effect of destroying control. So they remain slaves to habits which in affect they attempt to overpower by mental and physical exertion, often ending in frustration and exhaustion.

The following paragraphs cover the effects that alcohol, coffee, tobacco and drugs have on control of pistol shooting. If you have been plagued with a built-in error, it may be that the answer to your problems lies herein.

### ALCOHOL (ETHER)

#### 1. Effects of alcohol on the human body:

The name alcohol is used for a number of organic substances some of which, like glycerin, are necessary to good health. The scientific name for the alcohol sold for drinking purposes is ethyl alcohol. Ethyl alcohol is generally considered to be a habit forming narcotic. However, in the strictest scientific sense it is an anesthetic or pain killer like ether, which is made from it.

a. Alcohol taken into the body passes through the walls of the stomach and the small intestine and thence into the blood stream. It is rapidly distributed through the body and promptly affects the brain by decreasing its ability to take up oxygen. Even a small percentage of alcohol in the blood may sometimes cause remarkable effects. Inhibitions and the corresponding cautions are removed, reactions are slowed, coordination is impaired. The senses become less acute, particularly that of sight. The field of vision is reduced - ordinary objects become darker and indistinct - poorly lighted objects are lost entirely. Reactions are slowed down and concentration becomes difficult.

b. A peculiar property of ethyl alcohol is its ability to take up water. It is a valuable dehydrating and preserving agent. When used as a drink, alcohol produces a burning sensation as it takes up water from the delicate mucous membranes of the throat, stomach, and intestines, thus causing the drinker to become thirsty. Once alcohol becomes a part of the blood, its dehydrating properties are much reduced.

c. Although alcohol is a source of heat energy, its depressing effect upon the nerve centers that control the size of blood vessels causes the blood vessels of the skin to enlarge. So long as alcohol remains in the blood to affect the brain, extra heat loss by radiation will take place through the skin and prevent any benefit that might be derived from its oxidation and the resulting warmth. For this reason, in severely-cold weather, the man who drinks whisky to keep warm is in much greater danger of freezing than the person who does not.

## 2. Effects of Alcohol on Shooting:

a. Contrary to popular belief, alcohol acts as a depressant rather than a stimulant. It dulls the senses, lessens the desire to win, destroys coordination and lessens the shooter's ability to concentrate. Alcohol taken at the proper time in the proper amount might possibly lessen the shooter's anxiety but by doing so other effects are released that are far more harmful to the body and detrimental to the shooter's score. No one can say what the right amount is, or when it should be taken. Some shooters may shoot a good score with a hangover. But, the second day is when the after affects become acutely noticeable and the shooter's control may disintegrate on the firing line.

b. Experimental research scientists using delicate tests and sensitive instruments, have been able to demonstrate the adverse effect of even small amounts of alcohol on various isolated bodily functions such as sensory perception and discrimination, reaction time, fine coordination, judgment, alertness and efficiency of dexterity. The changes observed have no apparent difference in quality, magnitude or expression from those due to fatigue, hunger, distraction and a host of other environmental factors. These facts establish that one small drink of intoxicating beverage places the shooter under an enormous handicap. The false feeling of well-being is deceptive. Alcohol, and gun powder do not mix.

## COFFEE (Caffeine)

What's wrong with drinking coffee? That is easy - caffeine. Each cup contains an amount equal to about two pinches of salt. That doesn't sound like much, until you realize that it is one-third of the amount given by doctors as a heart stimulant. With three cups of coffee you are getting a dose of caffeine calculated by scientists to be medically effective for making a weakened heart work as hard and fast as a normal heart. When a heart is ready to quit, and won't pump another beat without the help of caffeine, maybe such a measure is justified. Are you sure your heart is ready for a synthetic jolt three to six times a day?

1. Effects of Coffee on the Human Body: Many coffee drinkers say they can't do without it as a pick-me-up during the day. But let us see what really happens after that coffee break. Dr. Rolf Ulrich, in his book, "Coffee and Caffeine," reports that after coffee consumption, mental tempo rises first, and speed of association increases, but there is a noticeable decrease in the quality of work being done. In test examinations it was seen that the subjects finished quicker, but that false conclusions were more frequent. Reliability and accuracy definitely took a beating as a result of a coffee pep-up.

The physical result is the same. Caffeine raises muscular output temporarily, but in severe physical demands of longer duration, the muscular output decreases. As a famous scientist has said, "Coffee acts like a spur, which drives a horse to do its best, but cannot replace oats." That is the whole problem in humans - many of them do expect coffee to take the place of "oats." They pass up a solid breakfast because they can get by with coffee. The stimulating and exhilarating affects coffee produces is usually followed by a loss of energy and a feeling of unsteadiness. No matter how we look at it, coffee takes more from the body than it gives. All coffees contain caffeine but in varying amounts. Fresh ground coffee is the most potent in caffeine. Instant coffees contain half as much and decaffeinated coffees contain about one third as much. It is imperative that a shooter refrain from drinking coffee before and during the shooting session and be moderate in coffee consumption when not firing.

## 2. Are you considering a change of pace drink, like tea? Before you do, read the following:

It is not generally known that tea has larger amounts of caffeine and tannic acid (the two most detrimental ingredients) per weight, than coffee. Caffeine in tea leaves is about three percent in ratio of one to two percent in coffee. The general effects of caffeine are cerebral, cardiac and diuretic (copious urination) stimulation. As to tannic acid, tea leaves have about ten percent while coffee berries have only about five percent content. Tannic acid, when brought into contact with mucous membranes, acts as an astringent and diminishes its secretions. It coagulates albuminous substances and thus hardens animal source food matter in the stomach with which it comes in contact. It also leads to more rapid clotting of the blood when absorbed into blood circulation. There is evidence of liver damage from extensive use. In solution, it is unstable and should not come in contact with metals. Since coffee is made about twice as strong as tea in liquid form, a strong cupful of either will contain about two grains of caffeine and over three grains of tannic acid.

3. A shooter should stay away from the colas. Cola drinks, in addition to other soft drinks, contain that well known perk-up ingredient, caffeine. The bottles of some brands contain a listing of cola contents which should serve as a reminder. Know them and avoid them while shooting.

## TOBACCO (Nicotine)

For a period after January 1964 when the U. S. Surgeon General (see paragraph D3, this chapter) revealed to the American public the results of an investigation into cigarette smoking and health, many smokers quit the habit. At the end of one year a poll taken revealed that one out of every four hundred smokers had quit. This small percentage points up the fact that most smokers will continue the habit no matter what the future consequences might be. The smoking habit is easily acquired and even after a short duration becomes a difficult habit to break. For this reason one who has not yet acquired the habit should be encouraged to abstain. The objective of this section is to provide you the shooter with information that will enable you to establish control of smoking in order to improve your shooting. Who knows, once you gain control of the smoking habit and can turn it on or off at will you might be inspired to quit all together.

1. The Effects Tobacco has on the Human Body. Nicotine is a powerful alkaloid poison. Its chemical formula is  $C_{10}H_{14}N_2$ , which means that it contains carbon, hydrogen, and nitrogen in the proportions indicated by the numbers.

a. Being a volatile substance, it is carried along with the burning smoke of the tobacco. In cigarettes about 61 percent of the nicotine is burned and destroyed, 27 percent is ordinarily exhaled, and about 12 percent is absorbed by the smoker. The absorbed nicotine specifically affects the nerves that regulate the heart rate and the size of the blood vessels, and, therefore, alters the pulse rate and the blood pressure. For about ten minutes after smoking is begun, the pulse rate is slowed about five beats per minute because of an increased stimulation of the nerves that slow the heart beat. After this temporary slowing effect, nicotine depresses these same nerves. This results in an increased pulse rate that lasts for two or three hours. The increase, for the average person, is from five to ten extra beats per minute. One cigarette after breakfast will step up heart beat for half the shooting day. With the damage already done, abstaining for the rest of the day's shooting is to small avail. The work of the heart is affected not only by the increased pulse rate but also by the decrease in size of the arteries. Both of these factors raise blood pressure and increase the work of the heart.

b. The carbon monoxide which is also present in tobacco smoke will, if inhaled, reduce the capacity of the hemoglobin of the red corpuscles to carry oxygen. This is due to the fact that hemoglobin absorbs carbon monoxide about 300 times faster than it does oxygen with which it ordinarily combines. Therefore, to the extent that the blood takes on carbon monoxide it cannot in that same proportion, carry oxygen. This results in "cutting the wind," or breathlessness, whenever there is exertion.

## 2. Effects of Tobacco on Shooting:

a. The combined effects of nicotine and carbon monoxide explain why the pistol shooter must avoid smoking if he is to shoot with the greatest possible skill. This conclusion does not mean that an individual or a team whose members smoke may not win, if it is competing against inferior opponents, but it does mean that any individual shooter on a team cannot perform at his best if he uses tobacco. The top competition today does not allow a margin of indulgence if you expect to win. Denying yourself a quick drag on the weed is not a sacrifice, it is a necessity for victory.

b. Simply explained, cigarette smoking affects the smoker by:

(1) Initially, slowing the pulse rate.

(2) Increasing the pulse rate.

(3) Increasing blood pressure and overworking the heart.

(4) Reducing the oxygen capacity of the blood, causing shortness of breath.

(5) Bringing on fatigue more quickly.

c. From the standpoint of shooting, smoking does affect performance, and more importantly, control. It is possible to become more proficient in shooting and still continue smoking, but the road is long and the progress slow. Many of our top shooters can attest to that fact. Today most of the top shooters are in the non-smoking class.

## DRUGS

Some shooters no doubt prescribe certain remedies for themselves when they have a cold, a stopped-up nose or a headache. Here are some of the effects of the drugs found in these and other preparations. Most of the effects are not conducive to good shooting. Most drugs are habit forming and all are a deterrent to good health if used frequently without proper medical advice. There is not substitute for good clean living, a healthy body and just plain GUTS!

1. A depressant slows reflexes, lessens the desire to win, promotes carelessness, causes loss of concentration and coordination.

2. A stimulant causes nervousness, hypertension, increases heartbeat, excessive movement of the hands, trembling, etc.

### 3. Drugs in daily use.

a. Barbiturates. (To induce rest and sleep)

Phenobarbital has special effects against insomnia. Continued use increases tolerance and leads to dependence. Acute anxiety may result if the drug is abruptly discontinued after long use. Alcoholics substitute barbiturates for alcohol and become just as devoted to it. Even after moderate doses, lassitude, dizziness, headache, nausea and diarrhea may occur. Other toxic effects are respiratory depressions peripheral vascular collapse, feeble heart beat, low body temperature and continued stupor with depressed reflexes.

b. Analgesics (Pain relief and reduction of symptomatic discomfort)

Aspirin - acetylsalicylic acid (relief of headache, fever and other symptomatic discomfort).

Gastro-intestinal distress due to irritation is common. Continued dosage symptoms same as quinine (Cinchonism): Dizziness, ringing in ears, impaired hearing, acidosis and depressed blood clotting mechanism.

c. Stimulants or adrenergics (Relief from drowsiness, depression, curbing the appetite and relief from nasal congestion.)

Benzedrine, amphetamine and ephedrine elevate blood pressure, accelerate the heart beat, causes headaches, nervousness, insomnia and spasms of the urinary bladder's sphincter. (Muscular control that permits urination.)

d. Antihistamines (Relief of colds and fever and relief or prevention of allergy symptoms.)

Exerts a potent sedative effect. There is a danger of toxic action, especially drowsiness. A form of antihistamine namely, methapyrilene, is used for sedative purposes. Used in conjunction with alcohol, this sedative action is especially dangerous as alcohol heightens the depressant effect.

e. APC pills: (Relief of headache and other symptomatic discomfort) Basic ingredients usually are acetanlid or acetophenetidin and caffeine. Continued use develops a blood condition known as methemoglobinemia or simply a union of oxygen and iron in the blood instead of oxygen and hemoglobin, the natural state. The oxygen in this instance is retained in the blood and not exchanged normally. Another combination used is aspirin (acetylsalicylic acid), phenacetin and caffeine. The phenacetin adds the property of antipyretic (reduction of fever.) Other effects similar to above.

f. Decongestant tablets. (Relief of colds, fever and prevention of allergy symptoms). Basic ingredients quite similar, usually as follows:

(1) Phenylephrine hydrochloride. A stimulant of the sympathomimetic group. It is a local vaso-constrictor, elevates blood pressure, reduces swelling of nasal membranes. It is usually mixed with a local anesthetic to retard rate of absorption. Used in treatment of vasomotor collapse which is a condition where the nervous system cannot control the dilation and contraction of the blood vessels.

(2) Phenindamine tartrate. An antihistamine. The tartaric acid may be detrimental to the kidneys.

(3) Acetylsalicylic acid (aspirin). See aspirin described above.

(4) An antipyretic (reduce fever) and analgesic.

(5) Caffeine. A stimulant, produces wakefulness and respiratory stimulation. When combined with an analgesic it is used to relieve headache. Continued use may produce nervousness and insomnia.

(6) Vitamin "C," (ascorbic acid): large dosage leads to gastro-intestinal upset.



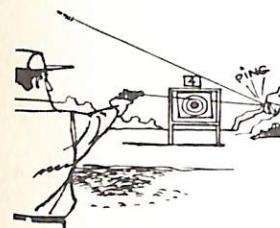
## Safety and Range Discipline

A GOOD SHOOTER IS A SAFE SHOOTER

### GENERAL RULES FOR SAFETY



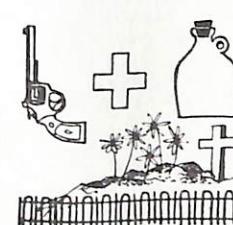
TREAT EVERY GUN AS IF IT IS LOADED, AT ALL TIMES.



BE SURE OF YOUR BACKSTOP.



BE SURE OF YOUR TARGET AND WHAT'S BEYOND.



GUNS AND DRINK DON'T MIX.



OBEY ALL FIXING LINE COMMANDS IMMEDIATELY.

**S**AFETY with guns, as with any other potentially hazardous machine, comes through learning and practicing safe procedures until they become habit. Add to knowledge and skill true respect for the pistol and accidents will not happen. Guns are dangerous only when people make them so. When handled improperly they can be instruments of danger to people and property; when handled correctly there is no danger. Obedience to the rules of safety and to range commands makes target shooting the safest sport we know.

Accidents don't just happen. They are caused by ignorance or disregard for safe procedure. Horseplay is an example of disregard for safety rules which is not allowed in marksmanship classes or on the pistol range. The rules of safety and proper gun handling should be practiced until they are never out of mind. They should be observed at all times.

# Pistol Targets 'Talk'

By T/SGT. EDMUND ABEL, USAF

Most pistol shooters have experienced a misplaced shot that has utterly defied explanation.

Since the pistol shooting brotherhood is composed of reasonably intelligent individuals, they tend to consider that every misplaced shot on the target has its logical explanation.

Vast strides have been taken in the last decade to improve target pistols to the quality demanded by serious shooters. Ammunition manufacturers have been working successfully to give pistoleers the close-grouping ammunition they require. An experienced pistol shooter's first response after spotting a flyer should be to question his own performance, not that of his equipment—which generally can out-perform the shooter.

Targets can 'talk' and tell quite a bit about a shooter's personal performance if one will take the time to study them. This process is referred to as target analysis.

It is assumed that correct zeroing of the pistol has been accomplished and that correct sight alignment and sight picture were obtained at the time the trigger was squeezed. The possibility of wind or light deflections as well as faulty ammunition and equipment must be excluded.

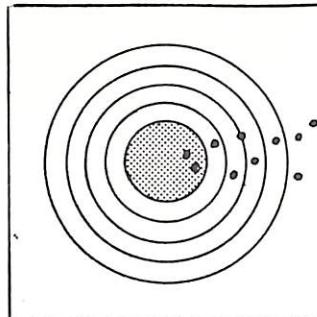
The targets shown depict the 8 most common errors that plague pistol shooters. They are for a right-handed

shooter, but by reversing the areas from left to right they will show the errors encountered by a southpaw.

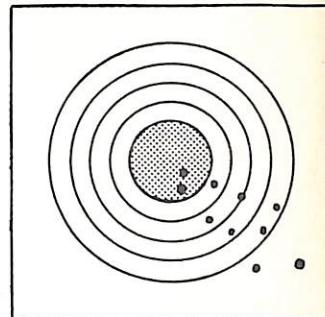
A shooter will sometimes not believe he made an error because he thought his front sight remained where it was supposed to be when the bullet left the barrel. He should realize that many of these errors will not be noticed from the working end of the weapon. The reason is quite simple: the recoil covered up the error at the last moment. But it is there.

If a shooter is having difficulty convincing himself that he is making any specific error, he can perform an exercise that will really make him a believer. In the military it is called 'ball and dummy' firing. In performing this exercise, the shooter is assisted by a coach or an observer. The coach does all the loading of the weapon. Sometimes he may put a live round in the chamber or he may load a dummy or a fired case, the shooter not knowing whether the weapon is loaded or not. Watch what happens when he thinks it's loaded and the hammer falls on an empty round. Now the shooter will be able to see the error because there is no recoil to hide it.

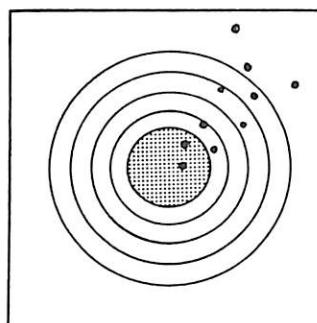
Once a shooter realizes he is not infallible and accepts the story that his target has to tell, he can then concentrate on his error(s) and will be on the road to better scores.



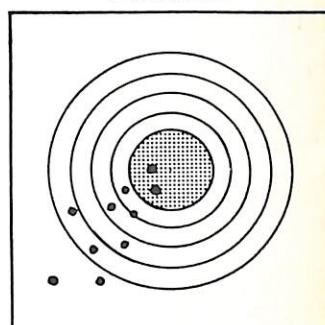
A shooter who occasionally strings his shots over to the 2:30 to 3 o'clock area is guilty of thumbing the weapon. Just as the shot starts, or before the sear releases, he pushes against the side of the frame with his thumb which causes the aligned sights to move to the right



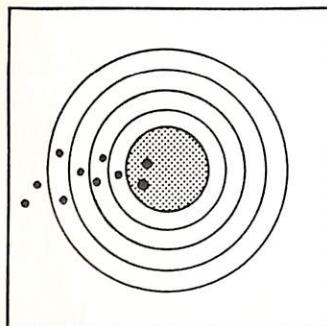
This is what happens when a shooter tightens his grip as he is squeezing. We call this the 'lobster' area. As a lobster's claw clamps together, so does the shooter's hand. He snatches at the last second. This movement made the front sight dip low to the right, pushing the shot to the 3:30 to 5 o'clock zone



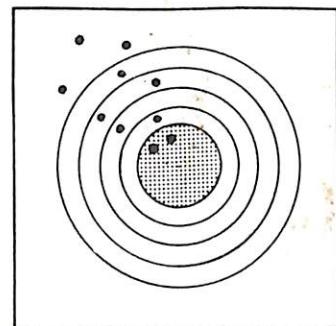
The shooter has 'heeled' his shot high on this target. This is caused by anticipating the shot and at the last moment giving a slight push with the heel of the hand. The front sight moves up to the right and the bullets strike the target anywhere in the 1 o'clock to 2:30 area



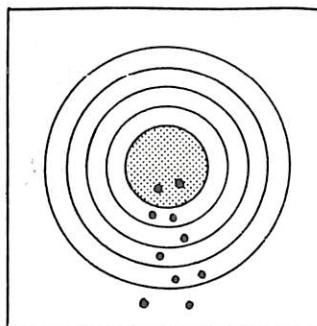
A target such as this indicates the shooter has jerked the trigger, causing the apparently good shot to strike in the 6:30 to 8 o'clock area. Here the front sight dipped low to the left by the time the bullet left the barrel. The only correction is to squeeze the trigger slowly up to and past the left off point, while not disturbing the sight alignment or sight picture



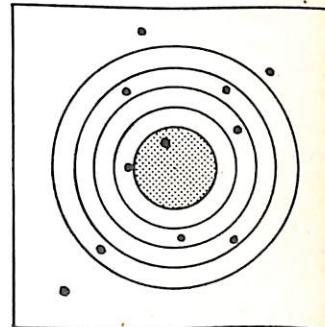
The flyers on this target were caused by the shooter placing his trigger finger too far into the trigger guard and on the trigger. If the second or third section of the finger is used to manipulate the trigger, the shooter has a tendency to squeeze at an angle rather than straight to the rear. When the sear breaks from the hammer, the final rearward movement of the finger caused the muzzle to shift left and the shot to strike in the 8:30 to 9:30 zone



Illustrated here are the effects of 'riding the recoil' of the weapon. This fellow is anticipating the recoil and is actually making the pistol recoil before it starts. His follow-through leaves much to be desired. Hits in such an area could also be caused by the shooter releasing his trigger finger too soon after the sear releases. He may flip his finger forward, which causes the front sight to rise to the left. Errors of this nature will usually show in the 9:30 to 12 o'clock zone



A shot string such as this that turns up in the 5 to 6:30 area is caused by the shooter 'breaking' his wrist. Here is another form of anticipation—the shooter expects the weapon to recoil at a known instant and tries to fight this recoil or hold it down by cocking his wrist down. He believes, subconsciously perhaps, that the recoil will be less if he can dampen it by holding it down. This group could also be caused by the shooter who relaxes too soon after he thinks the weapon has fired



There is no definite type of error noted here. Such a target could only be caused by inconsistency such as changing the grip between shots, focusing on the bull instead of the sights, or doing something different for each shot. Besides this, he shot one too many. If his weapon and ammunition are in good condition, this fellow had best close his pistol box, relax, have a smoke, and review what he has been doing